



# Parallax Ping))) Theremin

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## TOOLS:

- [ProtoShield \(1\)](#)
- [USB A to B cable \(1\)](#)

## PARTS:

- [Arduino microcontroller \(1\)](#)
- [Wire \(1\)](#)
- [LCD screen \(1\)](#)
- [10k Pot \(1\)](#)
- [8 Ohm mini speaker \(1\)](#)
- [PING\)\)\) Ultrasonic Sensor \(1\)](#)
- [Small Breadboard \(1\)](#)
- [headphone jack \(1\)](#)
- [Resistors, 1kΩ \(1\)](#)

## SUMMARY

This guide will cover the basic concept of the Ping))) sensor by making a fun project.

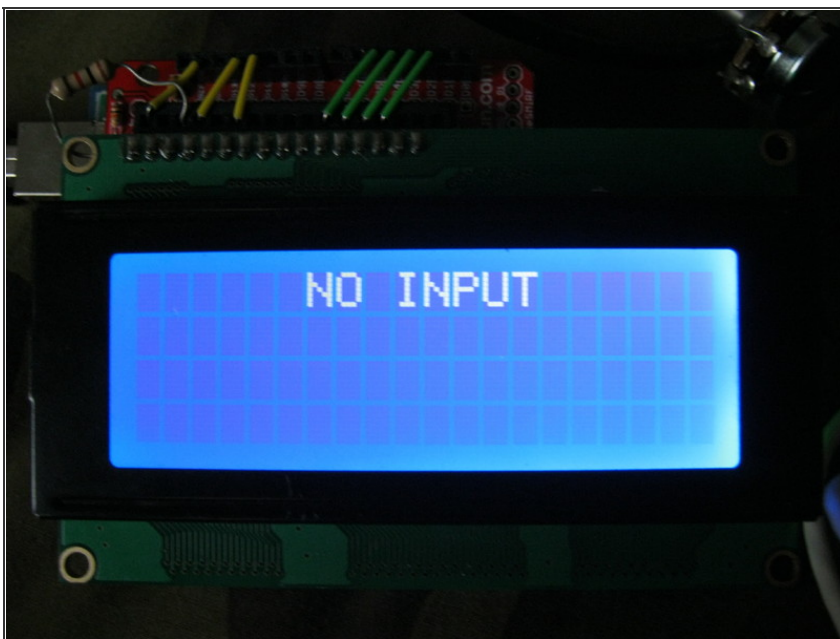
## Step 1 — Wire LCD backlight/logic circuits



- Wire backlight according to pins on LCD. Same for logic circuits. Pot wiper goes to Vo (contrast), one outer pin of the pot goes to ground, the other to 5v.
- Make sure polarities are correct.
- Use pot to control contrast to your needs.



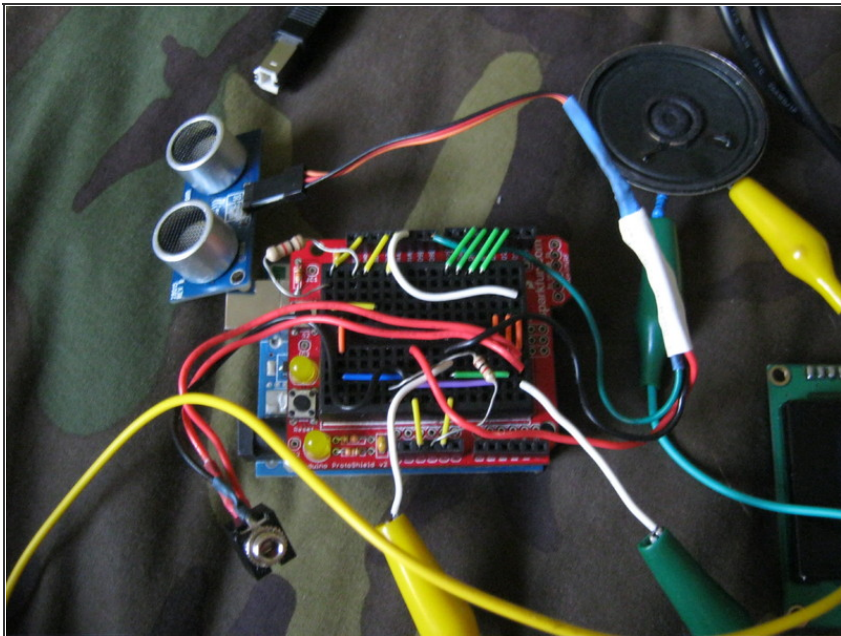
## Step 2 — Wire the digital pins



- \* LCD RS pin to digital pin 12 \*  
LCD Enable pin to digital pin 11 \*  
LCD D4 pin to digital pin 5 \* LCD  
D5 pin to digital pin 4 \* LCD D6 pin  
to digital pin 3 \* LCD D7 pin to  
digital pin 2 \* LCD R/W to ground
- I used a 1K resistor instead  
of a 10K pot.
- Use the 10K pot to control  
the contrast.



### Step 3 — Wire Ping))) and audio



- Sound is on pin 10 and ping is on pin 7. 1kΩ resistor on headphone ground.

### Step 4 — Upload code

```
pinglcd conversions.h info.h
cm = microsecondsToCentimeters(duration);
feet = microsecondsToFeet(duration);
meter = microsecondsToMeter(duration);

info( inches, cm, feet, meter);

if(serialOutput == true)
  SerialInfo(inches, cm, feet, meter);

if(cm <= 50.0 && cm > 0.1)
{
  tone(soundPin, cm * 100);
  tone(soundPin2, cm * 100);
}
else
{
  noTone(soundPin);
  noTone(soundPin2);
}
```

- Code can be found [here](#).
- Copy and paste code to Arduino IDE and click "Upload".

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